

In the Claims:

Please amend claims 1-9, 11, and 13-15, by rewriting the same, as follows:

1. (Currently Amended) A [laser] discrete standing wave photonic device
[for optical confinement and feedback], comprising:

a pair of distributed Bragg reflector mirrors surrounding a cavity in a vertical
(y) direction [(y)], whereby said cavity forms a vertical waveguide;

a waveguide in [the] a lateral (x) direction [(x)]; and

a distributed feedback grating in a longitudinal (z) direction [(z)] integral to
said cavity in said vertical (y) direction.

2. (Currently Amended) The [laser] device of claim 1 wherein useful light
is extracted [using] by an optical tap, or an etched or cleaved facet.

3. (Currently Amended) The [laser] device of claim 1 wherein said lateral
(x) direction optical confinement is achieved by [using modulation from] one of the
following: means for gain/loss modulation, means for index modulation, means for
effective index modulation, and/or means for resonant wavelength modulation.

4. (Currently Amended) The [laser] device of claim 1 wherein said [laser comprises a] waveguide in the lateral (x) direction and said distributed feedback grating in said longitudinal (z) direction integral to said cavity in the vertical (y) direction are replaced by a rotationally symmetric distributed feedback grating in [the] a radial (r) direction according to the equation where $r^2 = x^2 + z^2$ [rather than a waveguide in the lateral direction (x) and said distributed feedback grating in said longitudinal direction (z)].

5. (Currently Amended) The [laser] device of claim 4 in which useful light is extracted [using] by an optical tap, or an etched or cleaved facet.

6. (Currently Amended) The [laser] device of claim 4 wherein [lateral] optical confinement of the light propagating in said radial (r) direction is achieved by [using modulation from] one of the following: means for gain/loss modulation, means for index modulation, means for effective index modulation, and/or means for resonant wavelength modulation.

7. (Currently Amended) A discrete traveling wave photonic device [for optical confinement and feedback], comprising:

a pair of distributed Bragg reflector mirrors surrounding a cavity in the vertical (y) direction, whereby said cavity forms a vertical waveguide;

a waveguide in the lateral (x) direction; and

no optical confinement in the longitudinal (z) direction.

8. (Currently Amended) The device of claim 7 wherein useful light is extracted using an optical tap, or an etched or cleaved facet.

9. (Currently Amended) The device of claim 7 wherein said device is an active waveguide, a combiner, a splitter, a mixer, a switch, a passive waveguide, a filter, a modulator, an amplifier, a tuning section, or a photodetector.

10.(Currently cancelled) The device of claim 7 wherein the device is a combiner, splitter, or mixer.

11.(Currently Amended) The device of claim 7 wherein lateral (x) direction optical confinement is achieved by [using modulation from] one of the following: means for gain/loss modulation, means for index modulation, means for effective index modulation, and/or means for resonant wavelength modulation.

12.(Currently cancelled) The device of claim 7 wherein the device is selected to be one of the following group a switch, a filter, a modulator, an amplifier, or a photodetector.

13.(Currently Amended) A photonic integrated circuit , comprising:
a pair of distributed Bragg reflector mirrors surrounding a cavity in a vertical (y) direction, whereby said cavity forms a vertical waveguide common to component devices in the photonic integrated circuit;

a waveguide in a lateral (x) direction, and

optical tap means for injecting or extract[ed]ing light from said waveguide
integral to said pair of distributed Bragg reflector mirrors.

14. (Currently Amended) The photonic integrated circuit of claim 13 wherein component devices consist of one or more of the following: a laser, a filter, an amplifier, an active waveguide, a combiner, a splitter, a mixer, a switch, a passive waveguide, a filter, a modulator, an amplifier, a tuning section, and/or a photodetector.

15. (Currently Amended) The photonic integrated circuit of claim 13 wherein integration of component devices [integration] is provided by means outside of the plane of said [the] active waveguide layer utilizing reflective or diffractive elements.

Please add claim 16, by rewriting the same, as follows:

16. (New) The photonic integrated circuit of claim 13 whereby said active waveguide layer is optically pumped.

17. (New) The photonic integrated circuit of claim 13 whereby said component device includes one or more of the group of a discrete standing wave photonic device and or discrete traveling wave photonic device.

Please cancel claims 10 and 12.